

ABSTRACT

**METHOD AND SYSTEM FOR PERFORMING SWEPT-WAVELENGTH MEASUREMENTS
WITHIN AN OPTICAL SYSTEM INCORPORATING A REFERENCE RESONATOR**

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A method and system for performing swept-wavelength measurements within an optical system incorporating a reference resonator provides improved operation in resonator-enhanced optical measurement and data storage and retrieval systems. The system includes an illumination subsystem, an illumination coupler for producing a measurement beam and a reference beam from an output of the optical illumination source, a reference resonator for receiving the reference beam, a measurement resonator for receiving the measurement beam, at least two detectors, one optically coupled to the reference resonator and one optically coupled to the measurement resonator, and a time-domain measurement system coupled to the detectors for comparing detected optical signals received from the resonators. The detected signal from the reference resonator is used to compensate or detect variations in the wavelength of the illumination system, improving the resolution and accuracy of the measurement provided by the measurement resonator.